

**REMARKS**

**Election/Restriction**

Claims 13-24 have been cancelled, as requested by the Examiner.

**Title**

The title has been amended to recite "Process for Manufacturing Printed Circuit Boards with Thick Copper Power Circuitry", as suggested by the Examiner.

**Abstract**

The Abstract was objected to as being too long. The Abstract has been shortened to have less than 150 words. Reconsideration and withdrawal of the objection to the Abstract is respectfully requested.

**Claim Rejections - 35 USC § 112**

Claim 5 was rejected under 35 USC § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. The rejection of claim 5 has been rendered moot in that claim 5 has been cancelled.

## **Claim Rejections - 35 USC § 102**

Claims 1, 2, 7, 25, 26 and 31 were rejected under 35 USC § 102(e) as being anticipated by Patel et al. (6,623, 651 - hereinafter '651). In view of the amendments to independent claims 1 and 25, it is believed that claims 1-4, 6-12 and 25-35 are now in condition for allowance.

### **Claims 1, 2, and 7**

As the Examiner is aware, a rejection under 35 USC § 102(e) requires each and every element of the claimed invention to be taught in a single prior art reference. The '651 patent does not teach each and every element of the invention recited in Claim 1, as amended. You see, claim 1, as amended, recites:

a printed circuit board formed by the process comprising:  
forming a conductor core containing a thin base of electrically conductive material and areas of thick conductive material,  
the thick conductive material in a predetermined pattern of conductor traces extending laterally on the thin base;  
bonding the conductor core to a sublayer of electrically insulating material to create a flat laminate, wherein the areas of thick conductive material are positioned adjacent to the sublayer; and,

forming predetermined printed circuits having both thick conductor traces formed from the thick conductive material and fine resolution traces formed from the thin base by removing conductive material from the flat laminate that does not comprise said predetermined printed circuits to form the predetermined printed circuits.

The '651 patent does not teach a printed circuit board formed by the process of forming a conductor core containing a thin base of electrically conductive material and areas of thick conductive material, the thick conductive material in a predetermined pattern of conductor traces extending laterally on the thin base, as recited in claim 1. That is, the '651 patent teaches a process for making an electrical circuit board assembly where in a second step of the process, a pre-circuit assembly 20 is created by selectively removing some portions of top surface 14 of member 12 by a conventional etching process, thereby selectively creating several recessed or depressed portions 18 and several nubs, bumps and/or protuberances 15 which comprise the portions of the top surfaces 14 which are left and/or remain intact by the foregoing etching process. [see Column 3, lines 51-60] But, the "nubs, bumps and/or protuberances 15" are not "thick conductive material in a predetermined pattern of conductor traces extending laterally on the thin base" as recited in claim 1.

The '651 patent also does not teach or suggest a printed circuit board formed by the step of "forming predetermined printed circuits having both thick conductor traces formed from the thick conductive material and fine resolution traces formed from the thin base by removing conductive material from the flat laminate that does not comprise said predetermined printed circuits to form the predetermined printed circuits." The electrical circuit board of the '651 patent does not include predetermined printed circuits having both thick conductor traces formed from the thick conductive material and fine resolution traces formed from the thin base, as recited in claim 1. In contrast, the "nubs, bumps and/or protuberances 15" recited in the '651 patent selectively form "interconnecting 'vias' or 'crossover' type members."

[see Column 3, lines 57-60]

Claims 2 and 7 depend from claim 1 and thus include each and every feature recited in claim 1. Because the '651 patent does not teach each and every feature recited in claim 1, it follows that the '651 patent does not teach each and every feature recited in claims 2 and 7. In light of the foregoing, reconsideration and withdrawal of the rejection of claims 1, 2 and 7 under 35 USC § 102(e) is respectfully requested.

## **Claims 25, 26 and 31**

As the Examiner is aware, a rejection under 35 USC § 102(e) requires each and every element of the claimed invention to be taught in a single prior art reference. The '651 patent does not teach each and every element of the invention recited in Claim 25, as amended. That is, claim 25, as amended, recites:

A printed circuit core suitable for use as a component of a multilayer printed circuit formed by the process comprising:

forming a conductor core comprising a thin base of electrically conductive material and areas of thick conductive material, the thick conductive material in a predetermined pattern of conductor traces extending laterally on the thin base;

bonding the conductor core to a sublayer of electrically insulating material creating a flat laminate, wherein the areas of thick conductive material are positioned adjacent to the sublayer; and;

removing conductive material from the flat laminate that does not comprise said predetermined printed circuits thereby forming predetermined printed circuits having both thick conductor traces formed from the thick conductive material and fine resolution traces formed from the thin base.

The '651 patent does not teach a printed circuit board formed by the process of "forming a conductor core comprising a thin base of electrically conductive material and areas of thick conductive material, the thick conductive material in a predetermined pattern of conductor traces extending laterally on the thin base", as recited in claim 25. That is, the '651 patent teaches a process for making an electrical circuit board assembly where in a second step of the process, a pre-circuit assembly 20 is created by selectively removing some portions of top surface 14 of member 12 by a conventional etching process, thereby selectively creating several recessed or depressed portions 18 and several nubs, bumps and/or protuberances 15 which comprise the portions of the top surfaces 14 which are left and/or remain intact by the foregoing etching process. [see Column 3, lines 51-60] But, the "nubs, bumps and/or protuberances 15" are not "thick conductive material in a predetermined pattern of conductor traces extending laterally on the thin base" as recited in claim 25.

The '651 patent also does not teach or suggest a printed circuit board formed by the step of "removing conductive material from the flat laminate that does not comprise said predetermined printed circuits thereby forming predetermined printed circuits having both thick conductor traces formed from the thick conductive material and fine resolution traces formed from the thin base." The electrical circuit board of the '651 patent does not

include predetermined printed circuits having both thick conductor traces formed from the thick conductive material and fine resolution traces formed from the thin base, as recited in claim 25. In contrast, the "nubs, bumps and/or protuberances 15" recited in the '651 patent selectively form "interconnecting 'vias' or 'crossover' type members." [see Column 3, lines 57-60]

Claims 26 and 31 depend from claim 25 and thus include each and every feature recited in claim 25. Because the '651 patent does not teach each and every feature recited in claim 25, it follows that the '651 patent does not teach each and every feature recited in claims 26 and 31. In light of the foregoing, reconsideration and withdrawal of the rejection of claims 26 and 31 under 35 USC § 102(e) is respectfully requested.

### **Claim Rejections - 35 USC § 103**

Claim 8 was rejected under 35 USC § 103(a) as being obvious over the '651 patent. The rejection has been rendered moot due to the amendments to claim 1. Therefore, no further statements regarding the rejection of claim 8 is deemed necessary to be fully responsive to the rejection. Reconsideration and withdrawal of the rejection of claim 8 is respectfully requested.

Claims 3-6, 9-12, 27-30 and 32-35 were rejected under 35 USC § 103(a) as being unpatentable over the '651 patent in view of Bokisa (US 5,928,790) hereinafter '790. It is submitted that the '790 patent does not teach or even suggest the deficiencies of the '651 patent set forth above in view of the amendments to claims 1 and 25.

In particular, with respect to claims 3-4, 6 and 9-12, the combination of the '651 patent and the '790 patent does not teach or suggest:

forming a conductor core containing a thin base of electrically conductive material and areas of thick conductive material,  
the thick conductive material in a predetermined pattern of conductor traces extending laterally on the thin base; and

forming predetermined printed circuits having both thick conductor traces formed from the thick conductive material and fine resolution traces formed from the thin base by removing conductive material from the flat laminate that does not comprise said predetermined printed circuits to form the predetermined printed circuits.

With respect to claims 27-30 and 32-35, the combination of the '651 patent and the '790 patent does not teach or suggest:

forming a conductor core comprising a thin base of electrically conductive material and areas of thick conductive material,  
the thick conductive material in a predetermined pattern of conductor traces extending laterally on the thin base;  
removing conductive material from the flat laminate that does not comprise said predetermined printed circuits thereby forming predetermined printed circuits having both thick conductor traces formed from the thick conductive material and fine resolution traces formed from the thin base.

Therefore, reconsideration and withdrawal of the rejection of claims 3-6, 9-12, 27-30 and 32-35 is respectfully requested.

## **Conclusion**

The foregoing is intended to be a complete response to the Office Action dated February 8, 2005. Reconsideration and withdrawal of the objections and rejections is respectfully requested. Should the Examiner have any questions or comments regarding the foregoing, the Applicants' attorney welcomes a telephonic interview with the Examiner.

Respectfully submitted,

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